

§ 1505.8

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The thermal inertia of a material can be obtained by multiplying the thermal conductivity (cal./cm./sec./degrees C.) by the density (gm./cm.³) by the specific heat (cal./gm./degrees C.).

² All types.

³ No limit.

§ 1505.8 Maximum acceptable material temperatures.

The maximum acceptable material temperatures for electrically operated

toys shall be as follows (Classes 105, 130, A, and B are from “Motors and Generators,” Standard MG-1-1967¹ published by the National Electrical Manufacturers Association):

Material	Degrees C.	Degrees F.
Capacitors	(¹)	(¹)
Class 105 insulation on windings or relays, solenoids, etc.:		
Thermocouple method ²	90	194
Resistance method	110	230
Class 130 insulation system	110	230
Insulation:		
Varnished-cloth insulation	85	185
Fiber used as electrical insulation	90	194

	Class A	Class B	Class A	Class B
Insulation on coil windings of a.c. motors (not including universal motors) and on vibrator coils:				
In open motors and on vibrator coils—thermocouple or resistance method ²	100	120	212	248
In totally enclosed motors—thermocouple or resistance method ²	105	125	221	257
Insulation on coil windings of d.c. motors and of universal motors:				
In open motors:				
Thermocouple method ²	90	110	194	230
Resistance method	100	120	212	248
In totally enclosed motors:				
Thermocouple method ²	95	115	203	239
Resistance method	105	125	221	257
Phenolic composition ³		150	302	
Rubber- or thermoplastic-insulated wires and cords ³		60	140	
Sealing compound		(⁴)	(⁵)	
Supporting surface while the toy is operating normally		90	194	
Wood and other similar combustible material		90	194	

¹ If the capacitor has no marked temperature limit, the maximum acceptable temperature will be assumed to be 65 °C. (149 °F.) for an electrolytic type and 90 °C. (194 °F.) for other than an electrolytic type.

² The temperature indicated refers to the hottest spot on the outside surface of the coil measured by the thermocouple method.

³ The limitations on rubber- and thermoplastic-insulated wires and cords and on phenolic composition do not apply if the insulation or the phenolic has been investigated and found to have special heat-resistant properties, or if the insulation meets the thermal requirements.

⁴ 40 less than melting point.

⁵ 104 less than melting point.

Subpart B—Policies and Interpretations

§ 1505.50 Stalled motor testing.

(a) § 1505.6(e)(4)(ii) requires that a motor-operated toy be tested with the motor stalled if the construction of the toy is such that any person can touch moving parts associated with the motor from outside the toy. The performance of the toy shall be considered unacceptable if, during the test, temperatures higher than those specified

in § 1505.8 are attained or if temperatures higher than those specified for Type C surfaces in § 1505.7 are attained on any accessible surface of the motor.

(b) To determine if a moving part associated with the motor can be touched from outside the toy, the Commission staff will use a ¼-inch diameter rod, as referenced in § 1505.4(h)(1). If the rod, when inserted into openings in the toy, can touch any moving part associated with the motor, the toy will be tested with the motor stalled.

¹Copies may be obtained from: National Electrical Manufacturers Association, 155 East 44th Street, New York, NY 10017.